

RuralCONNECTIONS

A publication of the Western Rural Development Center

JUNE 2015

EXTENSION IN THE WEST: team builders

**WASHINGTON RURAL PATHWAYS TO PROSPERITY
CONFERENCE ACHIEVES WIDE-RANGING SUCCESS
USING A NEW MODEL OF DELIVERY**

*Innovative Approach Brings
Training Opportunities to Rural Areas*

**EXPLORING SAMOAN CULTURE AND FOOD SECURITY
THROUGH THE AMERICAN YOUTH LEADERSHIP PROGRAM**

*Advancing Mutual Understanding
Between the People of the U.S. and Samoa*

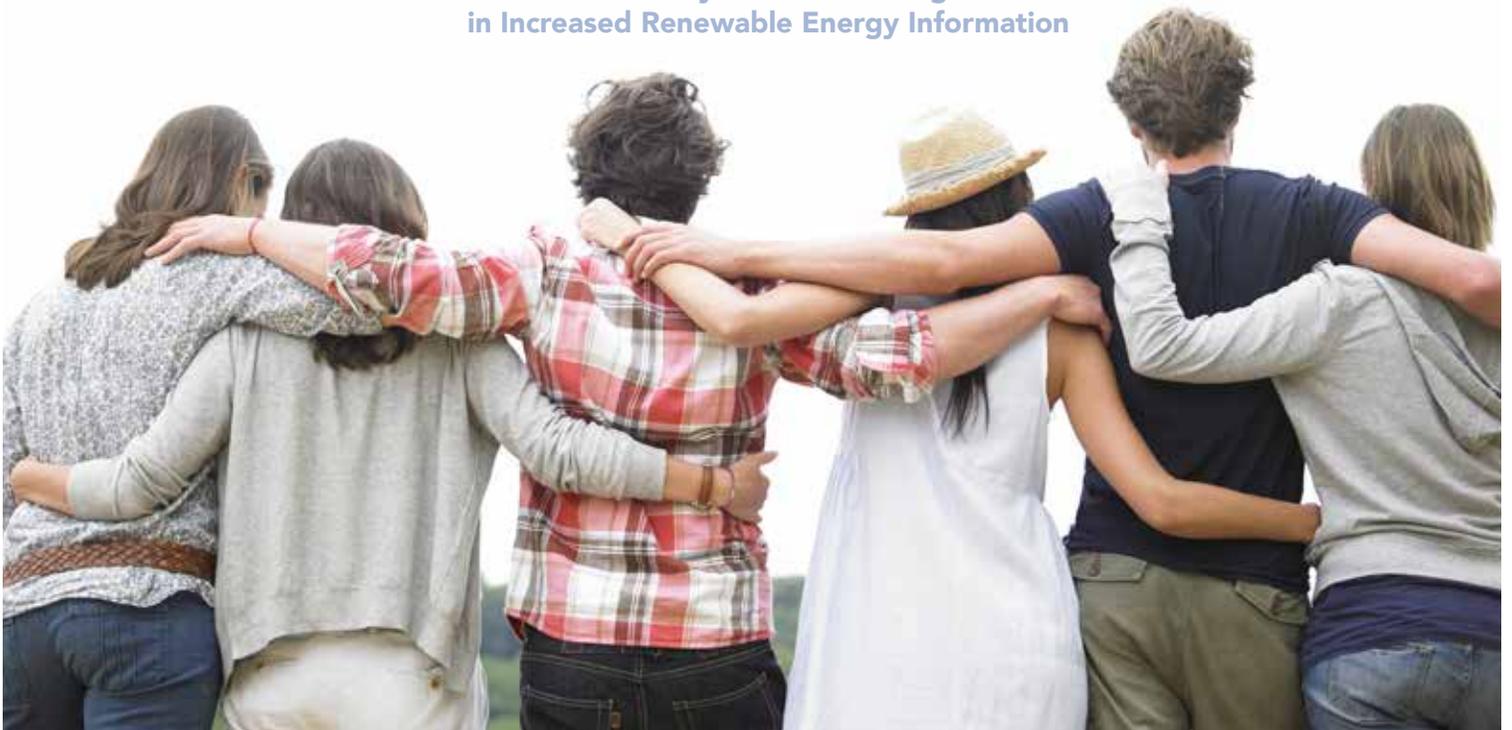
**COLORADO RIVER BASIN AGRICULTURAL
WATER CONSERVATION CLEARINGHOUSE**

*An Innovative Web-Based Project
and Communities of Practice*

NEVADA'S LIVING WITH FIRE PROGRAM

*An Organized Effort to Teach and Promote
Pre-Wildfire Threat Reduction Practices*

**RENEWABLE ENERGY'S ROLE
IN UNIVERSITY OUTREACH TO THE PUBLIC**
*Statewide Survey Indicates Strong Interest
in Increased Renewable Energy Information*



RuralCONNECTIONS

Published by the
©Western Rural Development Center
Logan UT 84322-4880

June 2015
Volume 9 Issue 1

EDITOR/DESIGNER
Betsy H. Newman

DIRECTOR
Don E. Albrecht

PROJECT COORDINATOR
Amy Wengert

CHAIR-BOARD of DIRECTORS
Ken White, Utah State University

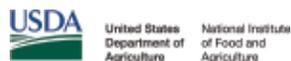
NATIONAL PROGRAM LEADER
Brent Elrod, USDA-NIFA

IMAGES
istockphoto.com
shutterfly.com
Debra Hansen
Stacey MacArthur
Ed Smith

The Western Rural Development Center (WRDC) compiles this magazine with submissions from university faculty, researchers, agencies, and organizations from throughout the Western region and nation. We make every attempt to provide valuable and informative items of interest to our stakeholders. The views and opinions expressed by these agencies/organizations are not necessarily those of the WRDC. The WRDC is not responsible for the content of these submitted materials or their respective websites and their inclusion in the magazine does not imply WRDC endorsement of that agency/organization/program.

This material is based upon work supported by funding through the National Institute of Food and Agriculture, U.S. Department of Agriculture. Any opinions, findings, conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the U.S. Department of Agriculture.

The Western Rural Development Center is hosted by Utah State University with generous support from USU Extension and Utah Agricultural Experiment Station.



Rural CONNECTIONS

A publication of the Western Rural Development Center



3



5



9



13



17



21

"In assessing future water imbalances and possible adaptation and mitigation strategies, the U.S. Bureau of Reclamation's 2012 Colorado River Basin Supply and Demand Study concluded that without action, the Colorado River system will become increasingly unreliable and may no longer be able to sustain the demands that rely on its supply." --Page 12

- 3 Introduction**
Don E. Albrecht
- 5 Washington Rural Pathways to Prosperity Conference "Small Business is Everybody's Business" Achieves Wide-Ranging Success Using a New Model of Delivery**
Innovative Approach Brings Training Opportunities to Rural Areas
Debra Hansen, Monica Babine, Margaret Viebrock
- 9 Exploring Samoan Culture and Food Security through the American Youth Leadership Program**
Advancing Mutual Understanding Between the People of the U.S. and Samoa
Stacey S. MacArthur
- 13 Colorado River Basin Agricultural Water Conservation Clearinghouse**
An Innovative Web-Based Project and Communities of Practice
Elizabeth Plombon, Julie Kallenberger, Reagan Waskom, and MaryLou Smith
- 17 Nevada's Living with Fire Program**
An Organized Effort to Teach and Promote Pre-Wildfire Threat Reduction Practices
Ed Smith, Sonya Sistare, and Elwood Miller
- 21 Renewable Energy's Role in University Outreach to the Public: A Perspective from Utah State University Extension**
Statewide Survey Indicates Strong Interest in Increased Renewable Energy Information
Blake H. Thomas and Roslynn Brain
- 27 ABOUT THE AUTHORS
- 29 REFERENCES



PICTURED: Crested Butte, Colorado/istockphoto

INTRODUCTION

By Don E. Albrecht
Director, Western Rural Development Center

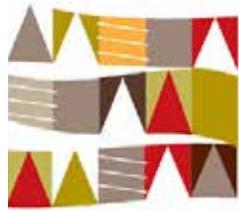
The Morrill Act of 1862 created the Land-Grant University system, which now has at least one institution in each of the 50 states. The Land-Grant system's three-fold mission includes teaching, conducting research intended to generate knowledge to address significant problems, and then extending useful knowledge generated by this research to the general public through Cooperative Extension. This system has proven to be extremely beneficial for vast numbers of people for over 150 years.

The Western Rural Development Center (WRDC) is committed to assisting the Land-Grant Universities of the West in fulfilling their important three-fold mission. As a regional center, the WRDC is in a unique position to facilitate research and Extension programming across state borders. *Rural Connections* is a tool of the WRDC to help us accomplish this objective. Through *Rural Connections*, significant and relevant research and Extension programs can be shared with persons throughout the region. The sharing of ideas across state lines allows everyone to be more effective and efficient.

This issue of *Rural Connections* continues the WRDC objective of sharing exceptional research and Extension programs. In this issue, Extension professionals from Washington, Utah, Colorado, and Nevada share exceptional programs on significant issues that include small business development, local and regional foods, water, wildfire, and renewable energy. Unquestionably, persons throughout the region can benefit from understanding these exceptional programs.

In this issue, Debra Hansen, Monica Babine, and Margaret Viebrock of Washington State University describe a program using a "Distributed Conference" format to deliver a carefully developed curriculum on small business development to audiences across the state. Stacey MacArthur of Utah State University Extension traveled to American Samoa as part of a program sponsored by the U. S. Department of State, Bureau of Educational and Cultural Affairs and administered by the University of Wyoming 4-H Youth Development Program. This program provided an opportunity for 20 youth and six adults from the 13 Western states to experience the Samoan culture first hand while exploring ways to improve food and healthy-living habits. Elizabeth Plombon, Julie Kallenberger, Reagan Waskom, and MaryLou Smith of Colorado State University describe the Colorado River Basin Agricultural Water Conservation Clearinghouse that deals with conserving water from the vitally important and heavily developed and used Colorado River. Extension professionals from the University of Nevada-Reno (Ed Smith, Sonya Sistare, and Elwood Miller) have developed programs to teach behaviors to communities and residents to help them reduce dangers resulting from wildfire. Finally, Blake Thomas and Roslynn Brain of Utah State University report the results of a survey that examines views about renewable energy information.

We are excited about the excellent research and Extension programs throughout the West, and we appreciate the opportunity to share this information with our colleagues. As always, *Rural Connections* editor and Assistant Director of the Western Rural Development Center, Betsy Newman, has done a tremendous job. Her talents are many and evident to all who have had the privilege of working with her. ♦



RURAL
PATHWAYS
to Prosperity
Conference



PICTURED: P2P Participant/D. Hansen

INNOVATIVE APPROACH BRINGS TRAINING OPPORTUNITIES TO RURAL AREAS

Washington Rural Pathways to Prosperity Conference “SMALL BUSINESS IS EVERYBODY’S BUSINESS” Achieves Wide-Ranging Success Using a New Model of Delivery

By Debra Hansen, Monica Babine, and Margaret Viebrock

Imagine attending a conference that costs a fraction of traditional statewide events – where you don’t have to travel out of your area, you have access to national, regional and local expertise, you strengthen local relationships, and at the end of the day you have begun taking steps to enhance community vitality.

There are many complex community and economic development issues that rural communities and their leaders are trying to overcome, yet limited time, excessive distance, and inadequate budgets make it difficult for these leaders to participate in a “single destination conference.” Those same challenges often make it impossible to bring national experts to rural areas. Following traditional, in-person, single location statewide offerings in 2010 and 2011, WSU Extension Community and Economic Development staff began exploring new approaches to meet the needs of rural leaders for access to the valuable knowledge and skills required to address these challenges and economic opportunities.

In 2013, efforts began to leverage lessons learned from the use of WSU’s Distributed Conference Model (DCM) developed for the successful Women in Ag Conference (see sidebar). The result: Rural Pathways to Prosperity, a statewide economic development conference, offered in Washington. It was organized at the state level by Extension and agency partners, and facilitated at the site level by community leaders. DCM is based on two core principles: Connect multiple sites with technology and engage local participants into action.

The Distributed Conference Format

This daylong conference model begins with an interactive webinar delivered by a national expert who provides content that is relevant to all of the geographically dispersed sites. Issues specific to each conference site are addressed by local facilitators through activities where they put the knowledge gained into action.

This model provides an opportunity to inspire, form regional networks, establish new relationships, and engage with a national expert. As noted by one participant, “More locals participate in the conference so the advice received spreads a lot further across the area. They also network with each other, getting to know local people that they hadn’t met before.”

When asked about the benefits, 95 percent of respondents prefer this regional model of delivery, one participant said, “... this kind of conference is accessible for remote/rural locations such as ours. If it were not available, many of our attendees would not have been able to benefit from it.” While another noted, “The smaller group gave us more of an opportunity to hear from others what challenges they are facing. It was a great afternoon activity that engaged the whole room. A statewide event would not allow such personal interaction.”

This hybrid delivery model bridges the gap between a typical, centrally located event where people must travel from all parts of the state, and an online webinar or prerecorded video presentation that is often viewed by individuals sitting at their desks. DCM engages existing resources (a local site, and site host), readily available technology (Microsoft GoToMeeting, and digital projection equipment), a subject matter expert, and a group of local and regional community members. A key benefit of DCM is summed up by this attendee, “This tool

is particularly suited to rural communities where resources are limited.”

Applying this to Economic Development: Pathways to Prosperity (P2P)

After surveying community and economic development professionals from across the state, “Small Business is Everybody’s Business,” was selected as the conference theme. In 2013, Becky McCray, co-author of “Small Town Rules,” presented about how to enhance the entrepreneurial ecosystem. The success of that conference led to expansion on that topic in 2015 with Erik Pages, EntreWorks, who focused on the importance of entrepreneurs in rural communities and shared ideas about how local leaders can support them. One participant stated, “The keynote provided enough good examples of ways to support entrepreneurs that our group was able to identify some doable actions to take. We just need to make sure we follow up.” The conference also was a good opportunity for businesspeople to get together with other area residents and resources to discuss concerns. Another was inspired, “Learning to recognize the variety of small businesses and entrepreneurs in the area that one might not otherwise consider. Their impact on the community is just as important as the larger, more obvious businesses.” In Figure 1 you can see that both Erik’s content and preplanned facilitated local activities were well received by participants.

Concerted Team Effort

The success of this conference delivery method is dependent on a concerted planning effort, which includes the development of the program, detailed agendas, facilitator guides, Extension-designed activities, coordinated marketing materials and associated training, mentoring, and support.

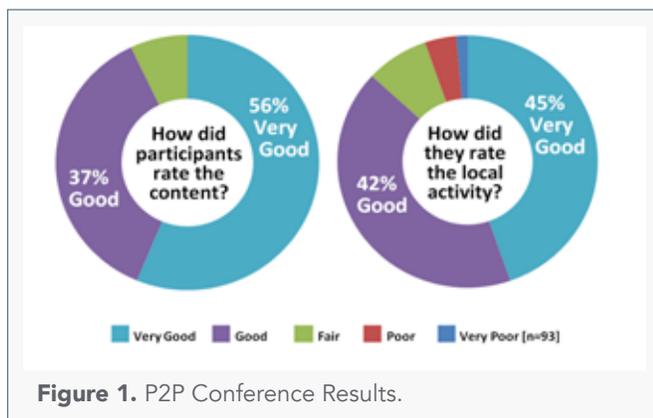


Figure 1. P2P Conference Results.

Crafting a strong planning team of diverse agencies from across the state ensures a wide variety of support and avenues for marketing the program. In addition to Extension faculty and staff, partners involved with planning and delivery included:

- Washington State Department of Commerce
- Association of Washington Cities
- Washington State Workforce Education and Coordinating Board
- USDA Rural Development
- Many local Economic Development Councils and Alliances

These partners helped support the conference through promotion, sponsorships, attendance, and have committed to provide assistance in the future. An example of this is the local leader who immediately after the conference ended took the USDA staff to see a facility in town in need of renovation.

Statewide planning was critical; however, the success of the event relies heavily on having very engaged and organized local assistance. At each site, three main roles are required – a site manager, a session facilitator, and a technology coordinator. Clearly understanding the goals of the program and how best to market it within the local community will help the event be successful.

High Return on Investment for Extension and their Partners

Minimal dollars were expended to bring this conference to rural communities across the state. The contribution of staff time spent on conference development, training, and outreach activity was achieved through Extension and partner agencies working together. Like the local participants, conference partners did not have to expend significant travel or training dollars, did not have to spend any nights away from home, and were all able to help provide resources and links to local action-oriented members of the communities being served. “P2P was a great springboard for Extension to bring further economic development resources to our rural communities. This organized forum will create an updated economic development strategy,” states Extension Director Clea Rome. “It created a new opportunity for me to bring statewide and local resources together in one, focused conversation,” added Extension Director Sheila Gray.

The Association of Washington Cities (AWC) offered Certificate of Municipal Leadership (CML) credits for elected officials, which helped with an added incentive for these community leaders to increase their awareness of the role of local government in economic development. There were over 30 elected officials across the state (eight at one site!). As an example of how this effort worked out, in Stevens County two mayors, a city council member, and a planning commission member participated in the conference. Mayor Knauss of Chewelah was thrilled to engage with ten local constituents in attendance and the first Chewelah Entrepreneur Networking Group meeting was set before the end of the conference.

Washington State USDA Rural Development motivated staff (program and area directors, the State Director, and loan specialists) to attend, resulting in USDA participation at ten locations. USDA staff was able to gain valuable Community and Economic Development experience by engaging with local and regional community and economic development experts in identifying and supporting rural entrepreneurs; they participated in developing local action plans; made new contacts; and shared information about resources available through USDA programs. One staff stated, "P2P was very successful for my own thought processes and views of rural business but also an excellent opportunity to get USDA Rural Development resources out there in the community and share how we can assist."

High-Impact, High-Tech, High-Touch, Low-Cost Model for Statewide Conferences

The Distributed Conference Model (DCM) offers a solution to challenges reaching rural communities. Using technology, and designing appropriate facilitated activities, this model can be modified and used in other venues. It provides Extension or other event organizers with a conference method that can be replicated without everyone needing to become an expert in the topic area. County Extension Director, Carrie Backman stated, "Living in a rural place where folks are pretty far from traditional conference venues, we don't get a lot of exposure to this caliber of material and speakers. This model allowed us to reach new people with new ideas, and helped spur conversation on doable action items on local economic development. Bringing in experts using this delivery model could help solve many of our other pressing issues."•

women in agriculture Conference

Empowering the Individual to Achieve Goals and Manage Risks

The Distributed Conference Model (DCM) was developed by Margaret Viebrock, WSU Extension, for the 2012 Women in Ag Conference. Now in its fourth year, the 2015 program had over 650 women farmers who learned marketing skills and enjoyed networking opportunities at 26 locations across four states (Alaska, Idaho, Oregon, and Washington).

Each year a national expert kicks off the conference by presenting a webinar on a relevant or emerging issue for women in agriculture. Topics have included financial planning, risk management, and adapting to change. Following the keynote, local resource providers lead women farmers through experiential exercises, focused on building knowledge and honing skills. Each farmer completes a two-part My Personal Action Plan form; one part for the planning committee to collect data for follow up activities and the other for the farmer's use. Said one participant, "I used my Personal Action Form and accomplished just about everything I planned to do. That was a great idea to write it down with a date to get started!"

Follow-up workshops in select locations are tailored to be more in-depth and specific. A dedicated website, electronic newsletters, and social media contacts throughout the year keep women producers engaged, supported, and successful. Between conferences, the program offers webinars presented by eXtension on topics recommended by participants, plus local workshops and facilitated opportunities for women to network with other farmers in the area. "Without this DCM, most participants would not have access to this level of national expertise nor the critical support network the conference offers for local opportunities to work together, share concerns, and strengthen their farm management and farm-family role," says Viebrock.



PICTURED: A day at the beach/S. MacArthur

Exploring Samoan Culture and Food Security through the American Youth Leadership Program

ADVANCING MUTUAL UNDERSTANDING BETWEEN THE PEOPLE OF THE U.S. AND SAMOA

By Stacey S. MacArthur

Introduction

The combination of extending knowledge to the people coupled with the 4-H motto of Learn by Doing describes the American Youth Leadership Program (AYLP) to Samoa. This program took place in 2014-2015 and was sponsored by the U.S. Department of State, Bureau of Educational and Cultural Affairs, and was administered by the University of Wyoming 4-H Youth Development Program. It provided an opportunity for 20 youth and six adult participants from the 13 western states to experience the Samoan culture first hand while exploring the changing food and healthy-living climate.

The educational theme for AYLP 2013-14 in Samoa "focused on nutrition and food security with educational activities concentrating on how marketing affects decision making, sustainable food production, and food security for school children" (AYLP flier, n.d.). I applied and was selected to be one of the adult participants in the program since the theme matched my State 4-H assignment of healthy living.

Many of the Pacific Islands, including Samoa, have experienced dramatic cultural transitions in the last fifty years. Some of these transitions surround healthy-living issues, some moving in a positive direction and others more negative (Davison et al., 2004). The American Youth Leadership Program provided participants the opportunity to assess healthy-living issues and examine them compared to the healthy-living climate in the U.S.

Specifically, the stated purpose of AYLP was "designed to advance mutual understanding between the people of the United States and Samoa, prepare youth leaders to become responsible citizens, spark an interest in learning about foreign cultures, and develop a cadre of Americans with cultural understanding who are able to compete effectively in the global economy" (<http://www.uwyo.edu/4-h/international/samoa/index.html>).

The timeline of the program was as follows:

- Youth and adult participant applications, interviews, and selection (April 2014)
- Pre-trip phone calls, planning sessions, email
- Face-to-face pre-trip orientation (August 2014)
- Monthly orientation phone conferences
- Trip to Samoa (Dec 2014-Jan 2015)
- Follow-on projects and reports (Jan-May 2015)

Pre-Trip Orientation

The youth and adult participants were well prepared for this cultural exchange program before traveling to Samoa. Preparation included group conference calls, information distributed via email, and a face-to-face orientation in Colorado taught by the adult participants. During the orientation, participants were introduced to the Samoan language, cultural etiquette, native foods, team building activities, and opportunities to voice and address any concerns.

Highlights of the orientation included:

- Team building/get-to-know-you activities
- Expectations
- Developing group ground rules
- Getting comfortable with being uncomfortable (e.g., sitting on laps to ride the bus, performing in front of each other, etc.)
- Samoan language
- Cultural implications of health issues (e.g., diabetes, obesity, etc.)
- Travel safety
- Focus groups/concerns
- Adult/staff debrief

Cultural Trip to Samoa

Arrival into the country was exciting. Participants started shedding travel clothing as the heat and humidity welcomed us to the island nation. Our welcome continued as we met our in-country host, Samoan host siblings, and Samoan University

students helping with our cultural experience. Each U.S. participant was greeted with a lei and a kiss on the cheek, and then had the opportunity to watch our first Samoan cultural dance by the Samoan host siblings before boarding colorful buses to the capital city of Apia to check into a hotel for the orientation portion of the trip.

Group Cohesion Activities

The time spent at the hotel in Apia was meant to gently introduce each group of youth to the other, along with their expectations, language, and food. Youth participants were matched with their Samoan host sibling so they could get to know each other before moving in with the Samoan host families. Many of the activities centered on what the youth knew about each culture and then filling in the gaps. The Samoan youth did a fantastic job doing skits about U.S. family situations of eating dinner, family interaction, and bathing practices. They were out of their league when trying to figure out how large the U.S. is and how far apart the U.S. youth lived from each other. This is understandable since travel around the entire island of Upolu can be done in one day, even driving only 30-40 miles per hour. The U.S. students loved learning Samoan phrases, cultural traditions, and typical schedules of the Samoan youth.

Moving into Family Homes

After the three group preparation days in Apia, we traveled out to the villages to take part in our first major cultural event, the 'Ava ceremony. We arrived in the village of Faleatiu for the ceremony, where village elders gave speeches and drank the 'ava beverage. This ceremony takes place in a fale (a circular open air building) with participants sitting cross-legged on the floor. From this same fale, host

family members came to collect their U.S. guest and take them back to their home. The homes were mostly similar with some living in a fale and others adding a semi-closed structure with bedrooms. The first couple of days with our Samoan families induced a little culture shock in most participants. However, the Samoan people are a very warm and inclusive culture and we were quickly assimilated.

Group Outings

Every few days, there were group outings to see and experience as much of the island and culture as possible. Swimming was often included in these trips to places like the Piula Cave Pools, Tafatafa beach, sliding rock, the ocean trench, and swimming with sea turtles. Other group outings included the Lava fields, the Nuu agricultural farm, the Virgin's grave, and a half island tour. These outings gave the host families some time without entertaining guests, while giving the youth time to reconnect with their peers.

Nutrition and Food Security Issues

To fulfill part of the program focus, the students participated in focus groups to discuss nutrition, food security, food selection, and lifestyle issues in the Samoan culture. These focus groups took place by village, or as a whole group, three to four times during the three-week trip. The outcomes of these focus groups are explained below.

Lifestyle in Samoa

First of all, Samoan culture is all about family, food, religion, and resting. As a matter of fact, rest took on a whole new meaning while we were there. Resting is part of daily life in Samoan culture and it took some getting used to for our on-the-go youth. Many times after group outings, students would joke that they needed to get back to resting with their host families.



PICTURED: Island Transportation/S. MacArthur



PICTURED: The author with her Host Sibling/S. MacArthur

It was not uncommon for Samoans (including adults) to rest or nap multiple times per day.

Family and family events are a big deal in Samoa. The participants noticed that since Samoan families either live together, in close proximity, or get together often, they didn't need holidays as an excuse to see each other. Multiple times per week, participants were able to experience many aspects of Samoan culture going with their host families to celebrate extended family birthdays, weddings, funerals (that last a week), and greeting family members returning to Samoa. These events included lots of people, food, singing, dancing, gifts, and time.

Food Climate in Samoa

As the youth participants observed and discussed foods they were eating, foods that were available to them, and foods their host siblings were eating, they realized that there were quite a few similarities with important differences in the food climate in Samoa compared with what they were used to in the U.S. First, they noted there is a lot of alcohol, tobacco, sugar, soda, snacks, and other carbs (e.g., white rice, white bread, etc.) consumed by the Samoan people. A contributor to this is the lack of stores out in the villages with healthy food options. They normally only have access to village food stands that mostly carry snacks and soda. In addition, participants noticed that it would be very difficult for most Samoan families to have any type of food storage on hand in case of emergency. Many families don't have refrigerators or storage areas to safely store food (away from humidity and bugs). Lastly, food preparation areas are outdoors and consisted of open fires and minimal cooking tools.

In contrast, participants also reported they were eating many delicious foods with their host families they don't normally have access to back home (especially right from the tree or field), such as taro, coconut milk, drinking coconuts, papaya, mangos, pineapple, and many types of fresh fish.

Follow-on Activities

Upon returning home, youth participants were asked to share what they learned in Samoa with others. This could be accomplished in a myriad of ways, such as school assemblies, group presentations, 4-H club meetings, and other sharing experiences. Much of what was accomplished with the youth was that they have a more global appreciation and respect for people and cultures and that people around the world are much more similar than different than they are. With that goal being accomplished, everyone wins.

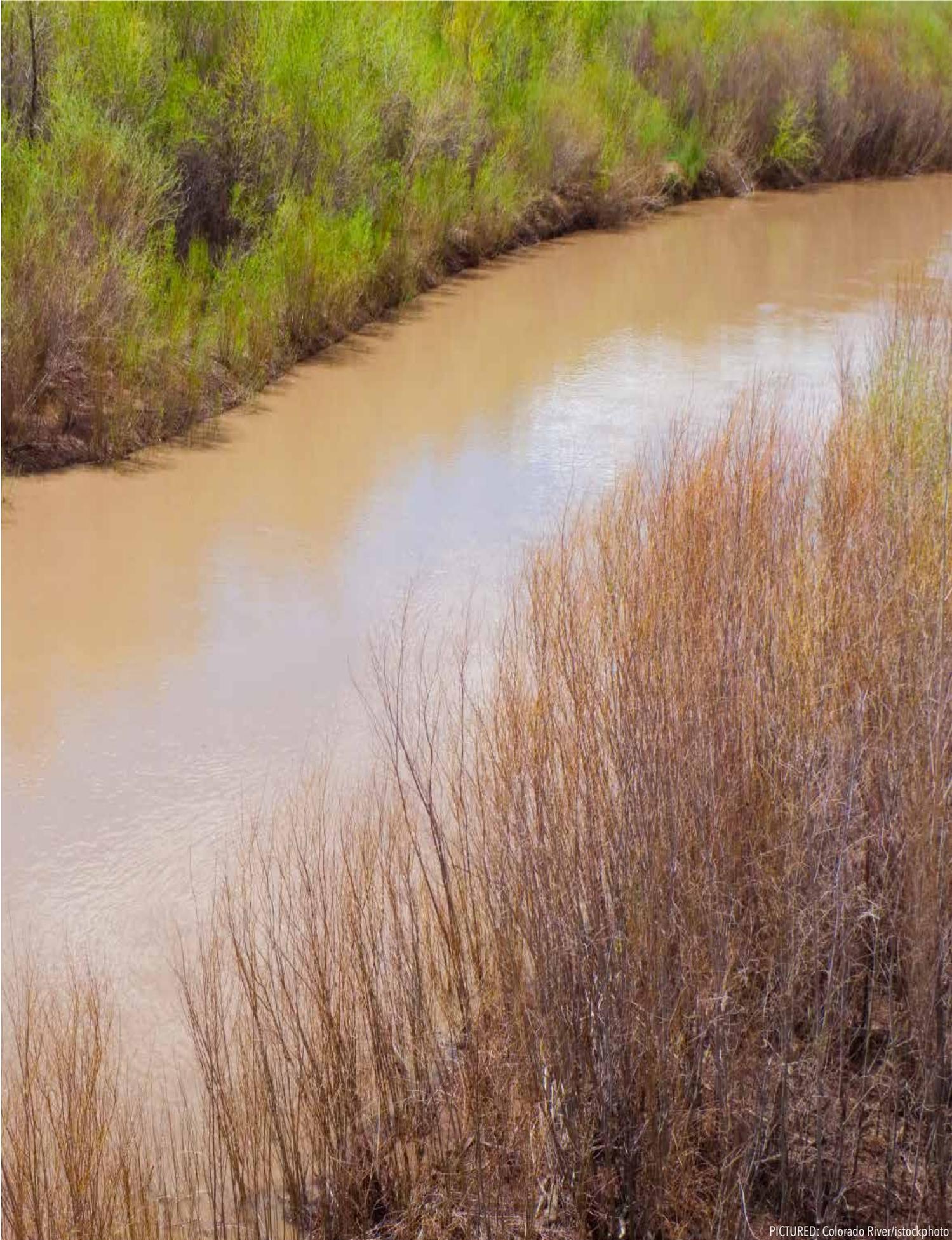
One participant summed up her experience stating, "These last three weeks have changed my life and who I am. I've been able to experience the amazing culture and people. They have such a strong pride in themselves and it was so amazing to be able to be exposed to that firsthand. I have discovered new things and created lifelong friends and family. I feel so blessed that I was able to receive this gift and experience it with the people I did. I miss everyone already and I hope to see them all in the future. This trip and everyone involved will always hold a special place in my heart." (Youth Participant from Washington, Jan. 2014, <http://www.uwyo.edu/4-h/international/samoa/index.html>).



PICTURED: Island Fruit/S. MacArthur



PICTURED: Fish Market/S. MacArthur



PICTURED: Colorado River/istockphoto

Colorado River Basin Agricultural Water Conservation Clearinghouse

AN INNOVATIVE WEB-BASED PROJECT AND COMMUNITIES OF PRACTICE

By Elizabeth Plombon, Julie Kallenberger, Reagan Waskom, and MaryLou Smith

Introduction

Spanning seven states, providing water to an estimated 40 million users, generating more than 4,200 megawatts of hydropower, supplying irrigation water for nearly 5.5 million acres of land, and standing as the life force for at least 22 federally recognized tribes, seven National Wildlife Refuges, four National Recreation Areas, and 11 National Parks, the Colorado River is one of the most vital sources of water in the United States and Mexico (USBR, 2012). But as much of the American Southwest enters its nearly 15th consecutive year of drought, the increasing strain put on the Colorado River's supply by water needs in the basin have become all too apparent. From watering and landscaping restrictions placed on urban centers, to increasing conflicts between different water rights uses in the basin, to the infamous "bathtub ring" around the perimeter of Lake Mead, the combined effects of drought, over-allocation, and increasing demand can be seen by all.

In assessing future water imbalances and possible adaptation and mitigation strategies, the U.S. Bureau of Reclamation's 2012 *Colorado River Basin Supply and Demand Study* concluded that without action, the Colorado River system will become increasingly unreliable and may no longer be able to sustain the demands that rely on its supply. Additionally, the study calls for obtaining one million acre feet of water from agriculture to address the looming supply gap threatened by exponential population growth and economic development, and the increasing magnitude and frequency of droughts and climate variability (USBR, 2012). Agricultural water users,

who control approximately 75-80 percent of the water in the Colorado River Basin (CRB), are being pressured to conserve water that can be transferred to meet growing municipal, industrial, environmental, recreational, energy, tribal, and other needs (Schaible & Aillery, 2012; Cohen et al., 2013).

Agricultural Water Conservation

Agricultural water conservation is a highly complex, multifaceted issue that is often mistakenly simplified



Ag Water Conservation Means Different Things

- Decreased crop consumptive use
- Increased crop water use efficiency
- Improved irrigation application efficiency
- Increased irrigation water diversion and delivery efficiencies
- Reduced water use or evaporation through adoption of conservation measures and new technologies
- Increased capture and utilization of precipitation

in public discussions and at the policy level. Factors, such as limited incentives for agricultural water conservation; variability and inconsistency of policies across states sharing water resources; research far surpassing application by many irrigators; financial barriers; cumulative basin-scale impacts and downstream dependency on return flows; limitations imposed by inefficient irrigation equipment and water delivery infrastructure; and current approaches to ditch and reservoir system management and administration all further influence the complexity of agricultural water conservation (Waskom et al., 2012). In order to sift through these complexities to develop an understanding of agricultural water conservation improvements, it is important to distinguish between practices that lead to improved water use efficiency and those that lead to reduced consumptive use.

Increasing irrigation efficiency is likely to reduce losses from deep percolation and runoff (thereby altering historical return flow patterns), but does not necessarily reduce crop consumptive use. Moreover, in some situations increased water use efficiency can even lead to increased consumptive use, as well as an increase in ET (evapotranspiration: the water taken in and transpired by a plant), and/or increase in the proportion of water incorporated into crops or other products resulting in a larger amount of water not returning to the water source as a return flow (Anderson, 2013). For example, an agricultural user may increase efficiencies by improving water delivery (e.g., lining ditches, pipelines, or polyacrylamides) or by on-farm applications (e.g., sprinklers, drip systems), yet still maintain the overall consumptive use in attempting to satisfy crop ET to maximize production on the same land (Waskom et al., 2012; Anderson, 2013).

It is also important to understand that the impacts of agricultural water conservation practices vary by spatial scale. As a producer increases his on-farm water use efficiency by adoption of an improved irrigation system, the water that previously would have been lost due to the inefficiencies of the old system can no longer return to the river or groundwater system for use by downstream users, resulting in impacts that can be experienced at the river basin scale. To truly achieve a reduction in consumptive use that is observable at the farm and (eventually, depending upon a number of site-specific factors) the regional or basin-level, a

decrease in irrigated acreage, conversion to less water-consumptive crops, use of deficit irrigation, and/or a reduction in non-beneficial evaporative losses from the field surface must occur (Waskom et al., 2012; Anderson, 2013).

Colorado River Basin Agricultural Water Conservation Clearinghouse

Given that available water supplies are not likely to increase, and existing distribution of supplies may shift with continuing changes in climate, future water needs for an expanding urban population will likely come from agriculture. In turn, reduced water resources in agriculture will add to the challenge of meeting a growing global demand for agricultural outputs; therefore, it is increasingly urgent for farmers, water managers, Extension agents, educators, and policy-makers to understand

Project Websites

- Colorado River Basin Agricultural Water Conservation Clearinghouse
crbawcc.colostate.edu
- Moving Forward on Agricultural Water Conservation in the Colorado River Basin
crbagwater.colostate.edu
- Agricultural Water Conservation Clearinghouse
agwaterconservation.colostate.edu

agricultural water conservation methodology, technology, and policy necessary to make informed management decisions. In response to the need for resources and tools that provide increased knowledge, understanding, and adoption of agricultural water conservation practices in the CRB, the Colorado Water Institute at Colorado State University has developed the Colorado River Basin Agricultural Water Conservation Clearinghouse (CRB AWCC) (<http://crbawcc.colostate.edu>).

The CRB AWCC is an innovative web-based project that seeks to bring together science-based, objective information, educational resources, and tools, while at the same time joining together communities of practice to collaboratively address the complex issues of agricultural water use and conservation in the CRB. The CRB AWCC is part of the outreach and education initiative of the *Moving Forward on Agricultural Water Conservation in the Colorado River Basin* project, a study by the Colorado Water Institute at Colorado State University in which engineers and social scientists are learning from agricultural producers what conservation methods are likely to work in their area and what changes to the many surrounding factors may be needed for agricultural water conservation to be fully effective in practice. Furthermore, this resource is an extension of our original Agricultural Water Conservation Clearinghouse website, which addresses agricultural water conservation globally, with a focus on arid and semi-arid areas. Both of these efforts are funded by the USDA-National Institute of Food and Agriculture.

As evidenced above, simply understanding the concept of agricultural water conservation and its assortment of impacting factors and considerations is far from easy. The CRB AWCC was created in response to the increasing need to further develop and expand this understanding, and does so by compiling and making accessible the array of technical information, tools, and water expertise on agricultural water conservation in the CRB. By providing links and information on federal and state Agricultural Experiment Stations and land-grant universities, information on agricultural water related research centers, irrigation management curricula, irrigation tools (e.g. software, manuals, calculators, irrigation schedulers, etc.), and additional CRB state resources, the CRB AWCC connects industry

with related research, educators to scientists, and technical experts to resource materials.

The Clearinghouse will also stand as a platform for disseminating what is learned from the other *Moving Forward* project initiatives. Tools developed within the project that will be displayed on the CRB AWCC will include: a database of conservation practices, costs, and engineering tradeoffs for the CRB; a database of legal, institutional, and socioeconomic aspects of Ag water conservation implementation in the CRB; a set of case studies of successful conservation programs in the CRB; a database of facilitation methods and case studies used for local engagement in conservation decisions; and a decision matrix that leads irrigation districts through a learning and discovery process to local decisions about implementing conservation programs.

Conclusion

If innovative new strategies are not forthcoming, water shortage in the CRB will inevitably result in water being transferred from farms and ranches to provide water for other demands. That in turn will affect the economic viability of rural communities, undercutting social stability, and threatening a valued way of life, wildlife habitat, and food production. Many of the problems and potential solutions to water scarcity in the CRB lie within agriculture; thus, agricultural water security is tightly linked to water security for the environmental, industrial, and municipal sectors.

The goal of the CRB AWCC is to research, compile, and assemble current and accurate information regarding agricultural water conservation in the CRB. By increasing access to this information, the CRB AWCC will help build collaborative relationships between and among agencies, provide technical expertise regarding agricultural water conservation, and offer detailed information on the management, policies, and laws surrounding agricultural water conservation in the basin. Through the tools and resources provided in this clearinghouse, better decisions about future water supply and demand in the CRB can be made. ●



NEVADA'S LIVING WITH FIRE PROGRAM

An Organized Effort to Teach and Promote Pre-Wildfire Threat Reduction Practices

By Ed Smith, Sonya Sistare, and Elwood Miller

Is it possible for a community of people to live in a high-hazard environment and co-exist with the threat of wildfire? The answer is “yes” if the community accepts the reality of the threat, engrains fire as a facet of the community’s culture, takes action to address the threat, and adopts an attitude of partnership with the fire protection agencies. Living With Fire (LWF) is an interagency program coordinated and implemented by University of Nevada Cooperative Extension that teaches vulnerable residents how to live more safely in wildfire prone areas. From a regionally focused fledgling program in 1998, LWF has expanded its reach and achieved national prominence. This article provides the historical context, operational methodology, and accomplishments of the LWF program.

Issue

The increasing occurrence of wildfire in Nevada threatens life, property, and valuable natural resources. High-fire-hazard environments throughout the State are prone to support intense and uncontrollable wildfires. During the decade of the 1990’s, more acres burned in Nevada than in the previous forty years combined and this trend has continued. Within this high-hazard environment are individual homes, subdivisions, and communities. Unfortunately, many Nevada homeowners have

not prepared themselves or their dwelling to survive a wildfire. Research results clearly show that implementing pre-fire wildfire threat reduction practices significantly improve a dwelling’s survivability. Prior to initiation of the LWF program, there was no organized effort to teach and promote these practices to Nevadans. Consequently, it was unlikely that homeowners would prepare themselves or their homes for wildfire.

The Beginning

In 1998, the Nevada Agricultural Experiment Station launched an innovative program to link public education through Cooperative Extension with research addressing pressing issues confronting Nevadans. To add practicality and relevance to the effort, community participation was also required. To take advantage of this opportunity, Ed Smith, Cooperative Extension's natural resource specialist and Paul Tueller, PhD, an Experiment Station remote sensing scientist, initiated a project entitled, "Wildfire Threat Reduction along the Eastern Sierra Front." To compliment this team, Fire Chief Loren Enstaad of the North Lake Tahoe Fire Protection District and Chairman of a unique coalition of Nevada firefighting agencies joined the project. Using remote sensing technology, the objective was to identify those inhabited areas in western Nevada and eastern California that faced the greatest wildfire threat. Once identified, a wildfire mitigation education program was to be developed and delivered to the residents. That outreach program eventually evolved into Living With Fire.

Approach

Faced with an array of recommendations emanating from multiple sources, Cooperative Extension first had to develop a standardized set of threat mitigation measures that could be uniformly promoted by responsible organizations. To this end, Extension requested that an interagency committee comprised of local wildland-urban interface (WUI) wildfire mitigation experts be formed to take up this challenge. Cooperative Extension's role was to facilitate the deliberations and ensure a science-based discussion as well as document the final recommendations. After eight hours of intense, consensus-building conversation and several drafts, "Wildfire Threat Reduction Recommendations for Nevadans," was approved by the committee. The recommendations addressed the topics of defensible space, built environment, and access, and became the core around which the LWF program was built.

The primary objective of the LWF program was to package and deliver these recommendations using a variety of methods and formats that would stimulate interest and result in effective learning by Nevada's WUI homeowners. The advantage of this approach was twofold: 1) a homeowner was exposed to consistent recommendations from multiple sources (e.g., Cooperative Extension, U.S. Forest Service,

local fire marshal, etc.) thereby increasing the credibility and perceived importance of the message; and 2) it allowed an economy of scale in producing program publications and materials (i.e., instead of multiple agencies producing their own materials, there would only be one set of interagency program materials).

Currently, LWF is co-managed by Cooperative Extension's natural resource specialist and a marketing specialist. The natural resource specialist is responsible for technical aspects of the program, including authoring peer-reviewed products, teaching at workshops, and pursuing financial support through grant funds. The marketing specialist implements strategies to effectively deliver LWF program materials to the target audience. This combination of both technical and delivery expertise has paid enormous dividends in terms of program success.

Delivery

During the 17 years that LWF has been in operation, more than one hundred workshops have been taught and over 60 peer reviewed publications, curricula materials, and audio-visual products have been developed. In 2014, LWF disseminated 13,850 copies of publications, had 24,255 online visits to specific publications, and 15,570 visits to Nevada and Lake Tahoe Basin websites. A wide variety of delivery methods have been utilized including social media, video productions, television programs, public service announcements, and conferences.



PICTURED: The theme for 2015 Nevada Wildfire Awareness Month is "Improve Your Odds – Prepare For Wildfire." This graphic is being used as a poster, on billboards, and in televised public service announcements.

Three examples are described below:

Living With Fire Tabloid: The first LWF product was a 16-page newsprint tabloid entitled “Living With Fire – A Guide for the Homeowner.” This publication, originally published in 1998, incorporated the standardized LWF recommendations in a “lay audience format” emphasizing the use of illustrations and photographs. A local newspaper pointed out that using a newsprint tabloid format allowed many rural Nevada newspapers to economically create their own version and deliver it as a newspaper insert. The demand for this publication was overwhelming with requests coming from across the country. In 2003, a survey regarding the number of versions and copies of the tabloid in circulation was conducted. The results showed that 16 states had produced at least 45 versions and that over two million copies were in circulation. University of Nevada, Reno Creative Services reported that it was the most widely circulated publication in the history of the University. Since 1998 the publication has been revised several times and later replaced with “Fire Adapted Communities: The Next Step in Wildfire Preparedness.”

Nevada Wildfire Awareness Month (NWAM): The month of May is given official recognition as a time to promote awareness and action concerning Nevada wildfire issues. A statewide interagency planning committee is established at the beginning of the year to create a theme for NWAM and solicit the involvement of numerous organizations to plan and hold activities across the State. In 2014, 165 activities were conducted by 153 collaborating entities for more than 4,400 participants.

Nevada Landscape Industry Training: Nevada’s landscape industry plays an important role in assisting homeowners to successfully reduce their wildfire threat. Unfortunately, both owners and landscape workers often lack the knowledge or skills in wildfire threat reduction methods to provide the necessary assistance. This program provides eight hours of training, followed by an exam and a certification opportunity. In 2014, the training sold out in the first three weeks of advertising with 65 landscape professionals in attendance. Eighty-nine percent of post-training evaluation respondents indicated they definitely had a better understanding of the wildfire threat to Nevada communities and 93 percent planned on using the information learned in the next 12 months.

Funding

LWF depends on Cooperative Extension’s funding of a full-time specialist position and extramural funds from the Bureau of Land Management’s Community Assistance Grants program and the Nevada Division of Forestry/US Forest Service’s State Fire Assistance Grants program. To a lesser extent and more intermittent basis, funding has also been provided by the Nevada State Fire Marshal, a regional firefighting coalition, the Nevada Insurance Council, and the Nevada Division of Emergency Management.

Program Evaluation

In January of 2010, 59 fire prevention specialists and 89 representatives from Nevada’s at-risk communities participated in a statewide evaluation of the LWF program. Fifty (85 percent) of the fire prevention specialists and 39 (44 percent) of the community representatives responded. Key outcomes for fire prevention specialists included: LWF materials were the most utilized wildfire threat reduction educational materials by 70 percent of respondents; 94 percent rated LWF materials and programs “good” or “excellent” and 61 percent indicated that LWF materials/programs played an important or very important role in homeowner compliance with wildfire threat reduction recommendations. Important results for community representatives included: 84 percent of respondents identified LWF materials and programs as the most often used in their community to reduce the wildfire threat; 74 percent rated the LWF materials as “excellent”; 91 percent indicated that they had implemented at least some of the LWF recommendations in the past year; and 84 percent indicated LWF materials and programs played an important or very important role in implementing pre-fire activities in their community.

The Future

The wildfire threat to Nevada communities will increase well into the future as will the need for the Living With Fire program. Like all programs that rely heavily on grant funding, the future existence of LWF extends no further than the next round of proposals and grant awards. Compounding this dilemma is the reality that the natural resource specialist position committed to the LWF program will retire at some point and currently there is no assurance that the position would be filled or the program continued. •



RENEWABLE ENERGY'S ROLE IN UNIVERSITY OUTREACH TO THE PUBLIC: A PERSPECTIVE FROM UTAH STATE UNIVERSITY EXTENSION

Statewide Survey Indicates Strong Interest in Increased Renewable Energy Information

By Blake H. Thomas and Roslynn Brain

Introduction

Utah's population has nearly tripled since 1970 and is projected to nearly double by 2050 (Utah Foundation, 2014). Expected population growth will create an increasingly urban population with increased energy demands (OED, 2014). Contributors to the June 2013 issue of *Rural Connections* highlighted the promise that renewable resources might have in meeting Utah's future energy needs:

- "Renewable energy resources are distributed throughout the West in far greater abundance than in any other region in the country" (Herbert, 2013).
- "Renewable energy development can bring important benefits to places like Beaver County [Utah]. The creation of many construction-phase jobs, along with expenditures on goods and services by developers and workers during the construction period, can provide a substantial short-term boost to rural economies" (Robertson and Krannich, 2013).
- "Renewable energies, such as wind, solar, and geothermal technologies, increasingly pose significant, if novel, economic opportunities to revitalize western, rural communities and steer them onto cleaner, more sustainable paths" (Stafford and Hartman, 2013).

Renewable resources are growing at an exponential rate despite their seemingly modest role in Utah's energy portfolio. In 2012, renewable resources accounted for 1.8 percent of Utah's production portfolio and 2.4 percent of its consumption portfolio (Vanden Berg, 2014). The distinction between these two percentages (production vs. consumption) is attributed simply to the fact that Utah is an exporter of electricity, sending 25 percent of its approximately 10,000 gigawatt hours to consumers in other states. This exportation of electrons creates distinct profiles for what a state consumes versus what it generates, and in Utah's case the profile of the electricity we

consume is less carbon intensive because most of the electricity we export is generated by coal.

In 2013, about 4.7 percent of Utah’s net electric generation came from renewable resources (EIA, 2014). Installed solar doubled to 18 megawatts (MW) in 2014, while wind remained at 325 MW (SEIA, 2014; AWEA, 2014). Currently, there are approximately 811 MW of renewable energy projects signed with power purchase agreements in Utah (Energy Strategies, 2015). The nature of energy generating resources is changing; moving from more consistent to more intermittent, from more carbon-intensive to less, and from more centralized to more distributed in nature.

The increase in utility-scale (e.g., large wind farms or solar arrays) and distributed (e.g., rooftop solar) renewable resources in Utah’s energy mix illuminates the need for unbiased, research-based energy information for rural and urban clientele. In the face of calls for relevancy, and a heightened interest in sustainable living programs, the time for Extension to carve its space in the energy sector is now (Bull et al, 2004; Brain, 2014). And despite an intermittent history of energy outreach, the internal appetite for more robust Extension involvement in energy issues is apparent (Geiger, 2014).

This article will discuss the findings of a survey sent to all Utah State University (USU) Extension employees in the summer of 2014. The intent of the survey was to gauge attitudes and views toward renewable energy outreach, education, and programming. The survey achieved an 83 percent response rate (n=195) and the results have applications to Extension professionals in the Intermountain West and nationwide.

Methods

An online survey was sent to all USU Extension employees (faculty, staff, administration, specialists, experts, etc.) through Qualtrics Survey Software. Dillman’s Total Design Survey Method was utilized; which included an introductory e-mail to participants, three unique follow-up reminders to non-responders, and a thank you note following survey completion (Dillman, 2007). Results were analyzed using the Statistical Package for Social Sciences version 22 software.

Results

Outside of biomass programming, USU Extension’s primary source for renewable energy information is the USU Extension Sustainability program.

The Extension Sustainability program is led by a sustainable communities specialist with a purview that includes the topic areas of energy, land, water, air, and food. The survey was conducted on behalf of the Extension Sustainability program and the key objectives were to discover USU Extension’s level of agreement of 1) the public demand for USU Extension to provide renewable energy information, programs, and outreach; 2) the internal demand for USU Extension to receive renewable energy information; and 3) the need for a renewable energy specialist in USU Extension. Given that energy is only one of five outreach areas communicated by one program leader in Utah in combination with the growing adoption of renewable energy technologies statewide, the final objective was to gauge whether a demand existed for focused statewide energy expertise.

Respondents demonstrated strong interest in increased renewable energy information, programs, and expertise within USU Extension (See Figure 1). The majority (total respondents and percentage noted in parentheses) indicated that they “strongly agreed” or “agreed” there was public demand for USU Extension to provide renewable energy information, programs, and outreach (n=84, 56 percent); there was internal demand for USU Extension to receive renewable energy information (n=87, 55.4 percent); and there was a need for a renewable energy specialist in USU Extension (n=92, 59 percent).

The majority support for increased renewable energy involvement within USU Extension occurred

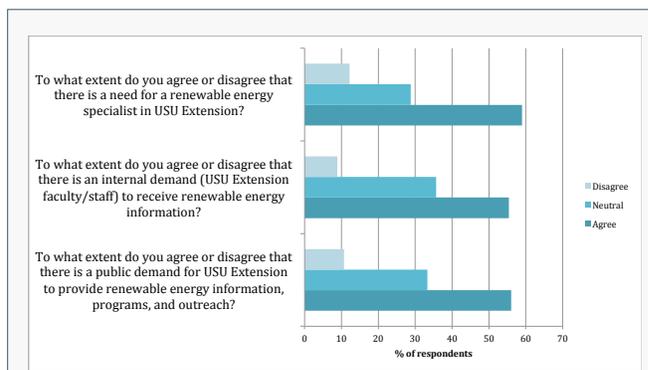


Figure 1. USU Extension employees’ interest in renewable energy outreach. Survey scale consisted of “Strongly Disagree,” “Disagree,” “Neutral,” “Agree,” “Strongly Agree,” and “Don’t Know”. Reported scale merged “Strongly Disagree” and “Disagree” as well as “Strongly Agree” and “Agree” due to sample size limitations. Respondents who selected “Don’t Know” were excluded from analysis.

despite differing energy attitudes across the state. Respondents were broken into three subgroups to evaluate if geographic location and role in the state affected energy attitudes and values. The three subgroups were divided into campus specialists, urban-based county employees, and rural/small urban-based county employees. Rural and urban locations were determined using the Economic Development Corporation of Utah's Wasatch Front Profile. Campus specialists were those located on USU's campus in Logan, Utah. Many of them were university professors who dedicated partial time to Extension. Urban respondents were those located in county offices within the Wasatch Front region. The Wasatch Front includes Utah's four most populous counties and is home to nearly 80 percent of the state's population (EDCUtah, 2007). Rural/small urban respondents included all county offices and Extension employees located outside of the Wasatch Front region.

To better understand energy attitudes among Extension personnel located across the state, the following question was asked:

- Some ways of generating electricity may be harmful to the environment because they produce air pollution, water pollution, toxic wastes, or other environmental problems. How environmentally harmful do you think each of these power sources is?
 - Power sources: Coal-fired power plants, wind energy, solar energy, geothermal energy, hydro power, nuclear energy, oil-fired power plants, and natural gas-fired power plants.
 - Response options: Very harmful, moderately harmful, somewhat harmful, slightly harmful, not harmful at all, and don't know.

A Pearson's Chi-Square test was performed to indicate whether there was a relationship across the three subgroups' in terms of perceptions of how environmentally harmful different power sources were. The Pearson's Chi-Square test compares the observed subgroup frequencies to those you might expect to occur in the subgroup by chance. Table 1 provides context to the Pearson's Chi-Square test results found in Table 2. For example, Table 1 illuminates the tendency for rural/small urban respondents to be much less likely to consider coal-fired power plants harmful than is the case for those who are from urban settings or those who are campus specialists.

The Pearson's Chi-Square test, indicating whether there was a relationship across the three subgroups' perceptions of how environmentally harmful different power sources were, was statistically significant at the $p \leq 0.05$ level for the following power sources: coal-fired power plants, wind energy, solar energy, and hydro power. Geothermal energy was statistically significant at the $p \leq 0.10$ level.

As previously mentioned, rural/small urban respondents perceive coal-fired power plants to be less environmentally harmful than campus specialists or urban respondents. Rural/small urban respondents also tended to be less critical of renewable resources than their campus specialist counterparts. For example, campus specialists considered wind energy "somewhat harmful" (21 percent) at much higher rates than urban (6 percent) and rural/small urban (5 percent) respondents. Campus specialists were also more likely to perceive solar energy as "somewhat harmful" (13 percent) compared to urban (0 percent) or rural/small urban respondents (0 percent). Additionally, more campus specialists (11 percent) and urban respondents (15 percent) perceived geothermal energy to be "somewhat harmful," while rural/small urban respondents selected less frequently (1 percent). Finally, hydro power also drew

Table 1.

Response frequencies comparing the three subgroups' responses to "How environmentally harmful do you think coal-fired power plants are?" Reported scale merged "Very Harmful" and "Moderately Harmful" as well as "Slightly Harmful" and "Not Harmful At All" due to sample size limitations. Respondents who selected "Don't Know" were excluded from analysis.

	Campus Specialists: Total Responses (Percent of Subgroup Responses)	Urban: Total Responses (Percent of Subgroup Responses)	Rural/Small Urban: Total Responses (Percent of Subgroup Responses)
Very Harmful / Moderately Harmful	42 (74%)	35 (78%)	38 (53%)
Somewhat Harmful	10 (17%)	7 (15%)	17 (24%)
Slightly Harmful / Not Harmful At All	5 (9%)	3 (7%)	16 (23%)
Total	57 (100%)	45 (100%)	71 (100%)

Table 2.

Pearson's Chi-Square test comparing the three subgroups' perceived harmfulness of each method of generating electricity.

	Pearson's χ^2 Value	Degrees of Freedom	P-value (2-sided)
Coal-fired Power Plants	10.875	4	0.028
Wind Energy	10.300	4	0.022
Solar Energy	16.539	4	0.001
Geothermal Energy	7.737	4	0.090
Hydro Power	21.060	4	0.000
Nuclear Energy	5.455	4	0.249
Oil-fired Power Plants	4.588	4	0.339
Natural Gas-fired Power Plants	5.395	4	0.253

high contrast, with campus specialists (38 percent) and urban respondents (19 percent) selecting “somewhat harmful” more frequently than rural/small urban respondents (7 percent).

The statistically significant differences in perceived harmfulness of power generating sources between the subgroups confirms diverging attitudes toward fossil fuels and renewable resources; yet respondents still indicated a majority of support (56 percent) for renewable energy programming.

The survey results indicate that there is a demand for renewable energy programming within USU Extension. An immediate way for USU Extension to provide meaningful renewable energy support to clientele across the state, and to find a niche among existing energy organizations, is to address the respondents’ perceived barriers to renewable energy development. The following barriers are those that USU Extension employees deemed greatest for their clientele:

1. Upfront costs of renewable energy systems are too expensive.
 - 88.8 percent of respondents agree/strongly agree.
2. The process of transitioning to renewable energy sources is too complex.
 - 48.1 percent of respondents agree/strongly agree.
3. Renewable energy technologies are too risky.
 - 33.6 percent of respondents agree/strongly agree.
4. Geographic location is unsuitable for renewable energy systems.
 - 16.1 percent of respondents agree/strongly agree.



Additionally, respondents gave clear direction on what structure and form of delivery they perceived to be most effective in addressing clientele concerns:

1. Energy website maintained by USU Extension.
 - 83.2 percent of respondents agree/strongly agree.
2. Fact sheets.
 - 79.8 percent of respondents agree/strongly agree.
3. In-person workshops.
 - 71.5 percent of respondents agree/strongly agree.
4. Renewable energy specialist to refer to.
 - 67.5 percent of respondents agree/strongly agree.

Conclusions

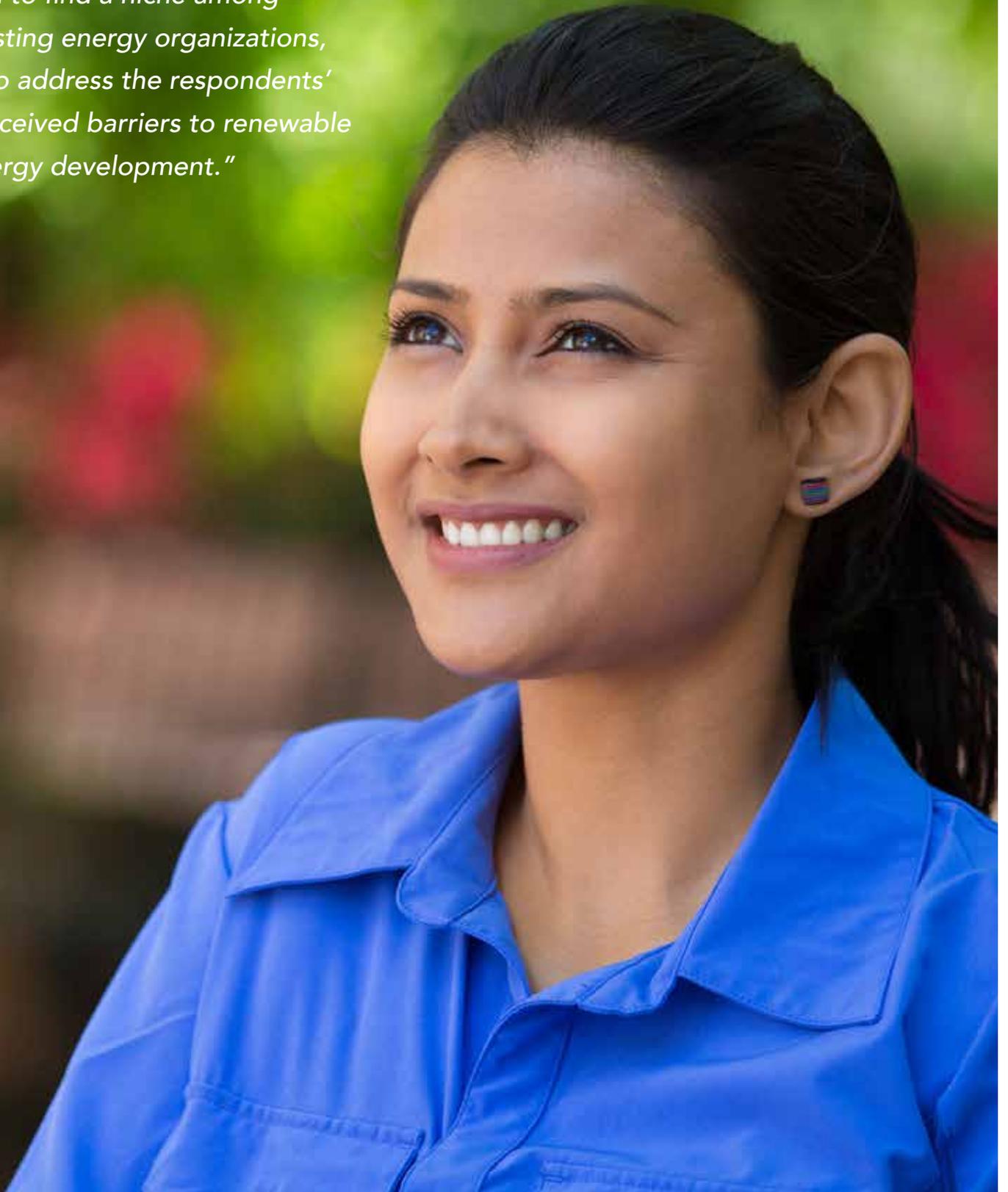
The principal barriers and preferred forms of energy information delivery represent the immediate needs that an energy specialist could address. The differing energy attitudes among subgroups serves as a reminder that renewable energy programming within USU Extension should be framed in a way that reflects the benefits and pitfalls of each technology, as well as the values and political beliefs of the general population. This non-divisive approach will ensure alignment with the core tenant of the Extension system – providing unbiased, research-based information to the public.

In a conservative, fossil resource rich (e.g., natural gas, coal, and crude oil account for approximately 95 percent of Utah’s energy production) state like Utah, the majority support for increased renewable energy programs in USU Extension gives promise to those seeking support for this type of initiative in other states. The generality of the renewable energy barriers can also provide direction to those states whose Extension efforts are already involved in renewable energy outreach.

Acknowledgments

The authors would like to thank Dr. Richard Krannich, Dr. Edwin Stafford, Dr. Peter Ashcroft, and Jeffrey Barrett for their contributions and recommendations to this article.

“An immediate way for USU Extension to provide meaningful renewable energy support to clientele across the state, and to find a niche among existing energy organizations, is to address the respondents’ perceived barriers to renewable energy development.”



ABOUT THE AUTHORS

WASHINGTON RURAL PATHWAYS TO PROSPERITY CONFERENCE "SMALL BUSINESS IS EVERYBODY'S BUSINESS" ACHIEVES WIDE-RANGING SUCCESS USING A NEW MODEL OF DELIVERY

Debra Hansen
County Director, Stevens County
Washington State University
debra.hansen@wsu.edu

Monica Babine
Senior Associate, Digital Initiatives
Washington State University Extension
babinem@wsu.edu

Margaret Viebrock
County Director, Douglas County
Washington State University
viebrock@wsu.edu

EXPLORING SAMOAN CULTURE AND FOOD SECURITY THROUGH THE AMERICAN YOUTH LEADERSHIP PROGRAM

Stacey S. MacArthur
Extension Assistant Professor
Utah State University
stacey.macarthur@usu.edu

COLORADO RIVER BASIN AGRICULTURAL WATER CONSERVATION CLEARINGHOUSE

Elizabeth Plombon
Masters Candidate and Graduate Research Assistant
Colorado Water Institute
Colorado State University
elizabeth.plombon@colostate.edu

Julie Kallenberger
Water Education and Outreach Specialist
Colorado Water Institute
Colorado State University
julie.kallenberger@colostate.edu

Reagan Waskom
Director
Colorado Water Institute
Colorado State University
reagn.waskom@colostate.edu

MaryLou Smith
Policy and Collaboration Specialist
Colorado Water Institute
Colorado State University
marylou.smith@colostate.edu

NEVADA'S LIVING WITH FIRE PROGRAM

Ed Smith
Natural Resource Specialist
University of Nevada Cooperative Extension
smithe@unce.unr.edu

Sonya Sistare
Living With Fire Senior Manager
University of Nevada Cooperative Extension
sistares@unce.unr.edu

Elwood Miller, PhD
Nevada Network of Fire Adapted Communities Coordinator
University of Nevada Cooperative Extension
millere@unce.unr.edu

RENEWABLE ENERGY'S ROLE IN UNIVERSITY OUTREACH TO THE PUBLIC: A PERSPECTIVE FROM UTAH STATE UNIVERSITY EXTENSION

Blake H. Thomas
Graduate Research Assistant
Utah State University
blake.thomas@aggiemail.usu.edu

Roslynn Brain
Assistant Professor and Sustainable Communities Extension Specialist
Utah State University
roslynn.brain@usu.edu

RuralCONNECTIONS

A publication of the Western Rural Development Center

MAY 2014

EXTENSION'S ROLE IN sustainability

EXTENSION SUSTAINABILITY OUTREACH

Rising to Meet Public
Sustainability Demand

ENERGY EXTENSION IS CENTRAL TO SUSTAINABILITY

Extension is Retooling
to Address Energy Issues

THE SUSTAINABILITY REVOLUTION

Where are we now?
What do we have to know?
What happens next?

EXTENSION'S ROLE IN IMPROVING WATER RESOURCE SUSTAINABILITY

Extension has a 100-Year History
Working on Water Issues

LAND USE AND SUSTAINABILITY IN THE WEST

Extension's Efforts in
Land Use Planning and
Sustainable Development

ADDRESSING CLIMATE RISK IN COOPERATIVE EXTENSION COMMUNITIES

An opportunity or an obstacle
to Extension work?

SUSTAINABLE FOOD SYSTEMS

Charting Extension's History
and Models for the Future



Read the May 2014 issue of *Rural Connections*
"Extension's Role in Sustainability"
wrdc.usu.edu/files/publications/publication/pub__7800913.pdf

REFERENCES

EXPLORING SAMOAN CULTURE AND FOOD SECURITY THROUGH THE AMERICAN YOUTH LEADERSHIP PROGRAM

Davison et al. 2004. Healthy living in the Pacific Islands: Results of a focus group process to identify perceptions of health and collaboration in the U.S.-affiliated Pacific Islands. *Journal of Extension*, 42(5).

COLORADO RIVER BASIN AGRICULTURAL WATER CONSERVATION CLEARINGHOUSE

Anderson. 2013. "Distinguishing Water Conservation from Water Savings in the Western USA." *International Journal of River Basin Management* 11(3): 269–76.

Cohen, et al. 2013. *Water to Supply the Land: Irrigated Agriculture in the Colorado River Basin*. Oakland: Pacific Institute.

Schaible & Aillery. 2012. *Water Conservation in Irrigated Agriculture: Trends and Challenges in the Face of Emerging Demands*. EIB-99. Washington: U.S. Department of Agriculture, Economic Research Service.

U.S. Bureau of Reclamation. 2012. *Colorado River Basin Water Supply and Demand Study*. Washington: Department of the Interior.

Waskom, et al. 2012. "Advancing Agricultural Water Conservation in Colorado." In *Irrigated Agriculture Responds to Water Use Challenges — Strategies for Success*, 101–11. Austin: U.S. Committee on Irrigation and Drainage.

RENEWABLE ENERGY'S ROLE IN UNIVERSITY OUTREACH TO THE PUBLIC: A PERSPECTIVE FROM UTAH STATE UNIVERSITY EXTENSION

American Wind Energy Association (AWEA). 2015. *Utah Wind Energy*. Available at <http://awea.files.cms-plus.com/FileDownloads/pdfs/Utah.pdf>

Brain. 2014. Extension Sustainability Outreach: Rising to Meet Public Sustainability Demand. *Rural Connections*, 8(2): 3-6.

Bull et al. 2004. Is Extension Relevant for the 21st Century? *Journal of Extension*, 42(6). Available at <http://www.joe.org/joe/2004december/comm2.php>

Dillman. 2007. *Mail and Internet Surveys: The Tailored Design Method* (2nd ed.). Hoboken, NJ: John Wiley & Sons Inc.

Economic Development Corporation of Utah (EDCutah). 2007. *Wasatch Front Profile*. Available at http://www.edcutah.org/files/WasatchFrontProfile_000.pdf

Energy Information Administration (EIA). 2014. *Utah: State Profile and Energy Estimates*. Available at <http://www.eia.gov/state/analysis.cfm?sid=UT>

Energy Strategies. 2015. *Utah 111(d) Modeling and Scenario Analysis Results*.

Geiger. 2014. Energy Extension is Central to Sustainability: Extension is Retooling to Address Energy Issues. *Rural Connections*, 8(2): 33-37.

Herbert. 2013. *10-Year Energy Vision: Western Governors' Association Energy Initiative*. *Rural Connections*, 7(2): 7-10.

Robertson et al. 2013. *Renewable Energy: Implications for Rural Development and Rural Policy in the Intermountain West*. *Rural Connections*, 7(2): 19-22.

Solar Energy Industries Association (SEIA). 2015. *State Solar Policy: Utah Solar*. Available at <http://www.seia.org/state-solar-policy/utah-solar>

Stafford et al. 2013. Wind Development as 'Sustainable Entrepreneurship'. *Rural Connections*, 7(2): 23-28.

Utah Foundation. 2014. A Snapshot of 2050: An Analysis of Projected Population Change in Utah. Available at <http://www.utahfoundation.org/uploads/rr720.pdf>

Utah Governor's Office of Energy Development (OED). 2014. Energy Initiatives & Imperatives: Utah's 10-Year Strategic Energy Plan 2.0. Available at http://energy.utah.gov/download/reports/10%20Year%20Strategy_2.0_03042014.pdf

Vanden Berg. 2014. Utah's Energy Landscape. Available at <http://energy.utah.gov/wp-content/uploads/Utahs-Energy-Landscape-3rd-Edition.pdf>

"P2P was a great springboard for Extension to bring further economic development resources to our rural communities. This organized forum will create an updated economic development strategy," states Extension Director Clea Rome."

--Page 7, "Washington Rural Pathways to Prosperity Conference 'Small Business is Everybody's Business' Achieves Wide-Ranging Success Using A New Model of Delivery"

"As the youth participants observed and discussed foods they were eating, foods that were available to them, and foods their host siblings were eating, they realized that there were quite a few similarities with important differences in the food climate in Samoa compared with what they were used to in the U.S."

-- Page 12, "Exploring Samoan Culture and Food Security Through the American Youth Leadership Program"

"During the 17 years that LWF has been in operation, more than one hundred workshops have been taught and over 60 peer reviewed publications, curricula materials, and audio-visual products have been developed. In 2014, LWF disseminated 13,850 copies of publications, had 24,255 online visits to specific publications, and 15,570 visits to Nevada and Lake Tahoe Basin websites."

--Page 19, "Nevada's Living with Fire Program"



The Western Rural Development Center is hosted by Utah State University
with generous support from USU Extension and the Utah Agricultural Experiment Station.

WRDC.USU.EDU
